

U.S. Department of Energy
Office of River Protection
Mr. Michael K. Barrett
Contracting Officer
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

CCN: 033566

Dear Mr. Barrett:

**CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL FOR APPROVAL –
AUTHORIZATION BASIS CHANGE NOTICE 24590-WTP-ABCN-ESH-02-012,
REVISION 0, *TYPES OF BUILDING CONSTRUCTION – FIRE RESISTANCE RATINGS***

Bechtel National, Inc. (BNI) is submitting Authorization Basis Change Notice (ABCN), 24590-WTP-ABCN-ESH-02-012, Revision 0, to the U.S. Department of Energy (DOE), Office of River Protection and the Office of Safety Regulation (OSR) for approval (attached). This ABCN requests approval to (1) remove the reference to National Fire Protection Association (NFPA) 220 for construction in the Initial Safety Analysis Request (ISAR), Volume II, Section 8.3, “Fire Protection Features and Systems”, and (2) tailor the Safety Requirements Document (SRD) implementing standard NFPA 801, “Standards for Facilities Handling Radioactive Materials” to reference the 1997 Uniform Building Code (UBC) for construction.

The SRD Safety Criterion 4.5-2 identifies implementing codes and standards related to Fire Protection (DOE STD1066, DOE G-440.1, and NFPA 801). The proposed changes in the attached ABCN reconcile inconsistencies that exist between the ISAR and the SRD with regard to building construction using noncombustible or fire-resistive materials. The changes comply with the requirements of the DOE guide and removes the potential conflict between implementing standards (NFPA 220 and UBC) for fire resistance ratings. This proposed change does not represent a reduction in commitment because the use of noncombustible or limited combustible materials for the construction of buildings containing significant quantities of radioactive and/or hazardous materials is not changed.

An electronic copy of ABCN 24590-WTP-ABCN-ESH-02-012, Revision 0, is provided for the OSR’s information and use.

Please contact Mr. Bill Spezialetti at (509) 371-4654 for any questions or comments.

Very truly yours,

A. R. Veirup
Prime Contract Manager

TR/slr

Attachment: Authorization Basis Change Notice (ABCN), 24590-WTP-ABCN-ESH-02-012,
Revision 0, plus attachments

cc: <u>Name (ALPHABETIZE)</u>	<u>Organization</u>	<u>MSIN</u>
Barr, R. C. w/a (1 hard copy and 1 electronic copy)	OSR	H6-60
Beranek, F. w/o	WTP	MS6-P1
Betts, J. P. w/o	WTP	MS4-A1
DOE Correspondence Control w/a	ORP	H6-60
Erickson, L. w/a	ORP	H6-60
Gibson, K. w/o	WTP	MS6-R1
Naventi, R. F. w/o	WTP	MS4-A1
Nakao, R.M. w/a	WTP	MS4-B2
PDC w/a	WTP	MS5-K1
QA Project Files w/a	WTP	MS4-A2
Ryan, T. B. w/a	WTP	MS6-R1
Schwier, J. F. w/o	ORP	H6-60
Struthers, D. J. w/o	ORP	H6-60
Swailles, J. H. w/a	ORP	H6-60
Taylor, W. J. w/a	ORP	H6-60
Veirup, A. R. w/o	WTP	MS4-A1



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ABCN Title Types of Building Construction - Fire Resistance Ratings

<input checked="" type="checkbox"/>	Process Management Team (PMT)	<u>Dennis Klein</u>	<u></u>	<u></u>
		<i>Print/Type Name</i>	<i>Signature</i>	<i>Date</i>
<input checked="" type="checkbox"/>	HVAC/Fire Protection Manager	<u>Jan J. Sanders</u>	<u></u>	<u></u>
		<i>Print/Type Name</i>	<i>Signature</i>	<i>Date</i>

C. ABCN Approval

WTP Project Manager Ron Naventi

Print/Type Name *Signature* *Date*

II. Description of the Proposed Change to the Authorization Basis

D. Affected AB Documents:

Title	Document Number	Revision
Initial Safety Analysis Report Volume II	24590-WTP-ISAR-ESH-01-001-02	1
Safety Requirements Document Volume II, Appendix C: Implementing Standards	24590-WTP-SRD-ESH-01-001-02	0

Decision to Deviate ☐ Yes ☒ No

If yes, DTD Number Deficiency Report Number

Initiating Document Number Revision

E. Describe the proposed changes to the Authorization Basis Documents:

Change ISAR Volume II, Section 8.3 **Fire Protection Features and Systems** to read “The process building is designed and constructed of noncombustible or limited combustible materials and complies with the standards of Type I construction as defined in NFPA 220, *Standard Types of Building Construction*.”

Add to SRD Volume II, Appendix C Section 6.0 **NFPA 801, Standards for Facilities Handling Radioactive Materials**, Page C-16

Section 3-5

Replace “(Type I or Type II in accordance with NFPA 220, Standard on types of Building Construction)” with “(Fire resistance in accordance with the 1997 edition of the Uniform Building Code [UBC])”.

Justification: The applicable building code for RPP-WTP Project is the 1997 Uniform Building Code (UBC). UBC specifies building requirements for fire resistance, allowable floor area, building height limitations, and building separation.

F. List associated ABCNs and AB documents, if any:

24590-WTP-SRD-ESH-01-001-02, Rev.0 *Safety Requirements Document Volume II* Safety Criterion 4.5-2

G. Explain why the change is needed:

This change does not change previous commitments with regard to building construction using noncombustible or fire-resistive materials to the UBC, but eliminates inconsistencies between the SRD and the ISAR and between daughter standards referenced in the SRD implementing Standards. The SRD was previously tailored to identify the 1997 edition of the Uniform Building Code as the “applicable building code” for the RPP-WTP project per the requirements of DOE G-440.1 *Implementation Guide for use with DOE Orders 420.1 and 440.1 Fire Safety*



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ABCN Title Types of Building Construction - Fire Resistance Ratings

G. Explain why the change is needed:

Program. However, inconsistencies exist between the SRD and the ISAR, and between the daughter standards referenced in SRD implementing standards that were not identified at the time. Deleting the reference to NFPA 220 in the ISAR and tailoring implementing standard NFPA 801 eliminates the inconsistencies and potential conflicts with the previously identified governing implementing standard, the UBC.

SRD Safety Criterion 4.5-2 identifies implementing codes and standards related to Fire Protection (DOE STD1066, DOE G-440.1, and NFPA 801). The inconsistency with regard to building construction using noncombustible or fire-resistive materials is as follows:

1) DOE G-440.1 *Implementation Guide for use with DOE Orders 420.1 and 440.1 Fire Safety Program* was tailored to clarify that the 1997 edition of the Uniform Building Code is the "applicable building code" as stated in SRD Appendix C. DOE-STD-1066-97 *Fire Protection Design Criteria* requires the use of UBC to determine building construction, protection, and area limitations. However, NFPA 801 *Standards for Facilities Handling Radioactive Materials*, Chapter 3-5 *Construction*, references NFPA 220 *Types of Building Construction*. NFPA 220 classifies buildings into types in a similar fire rating classification as the UBC but, NFPA 220 is not a building code, nor does it establish requirements for building construction based on a particular occupancy or building size.

2) ISAR Volume II, Section 8.3 references NFPA 220 for process building construction of noncombustible or limited combustible materials rather than referring to the UBC.

As stated in DOE G-440.1, Section III, subsection 5, the applicable building code should be met unless written relief has been granted from the DOE. The DOE has not granted relief from the UBC and therefore, the requirements of the UBC must be followed for fire resistance requirements, allowable floor area, building height limitations, and building separation requirements. This position is discussed in Item 9 of Attachment 2 to DOE letter 00-RU-0038 dtd 12/16/99, Subj: BNFL Proposal For the Use of Automatic Sprinklers in TWRS-P WTP and The September 29, 1999 Fire Protection Meeting Minutes, Chron #009651. Deleting the reference to NFPA 220 in the ISAR and tailoring implementing standard NFPA 801 eliminates the inconsistencies and potential conflicts with the governing implementing standard, the UBC and, is consistent with the building code specified in the other SRD Safety Criterion 4.1-2, 4.1-3, and 4.1-4.

H. List the implementation activities and the projected completion dates:

<u>Activity</u>	<u>Date</u>
Inform DOE that AB has been revised and formally transmit electronic changes	30 days or less from DOE approval
Distribute revised controlled page changes	30 days from DOE approval

Revise the following implementing documents:

<u>Documents</u>	<u>Describe extent of revisions</u>	<u>Date</u>
1 none		
2		
<u>Describe other activities:</u>		<u>Date</u>
1		
2		



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ABCN Title Types of Building Construction - Fire Resistance Ratings

III. Evaluation of the Proposed Change

I. Is DOE prior approval required?

- 1 Does the revision involve the deletion or modification of a standard previously identified or established in the SRD? Yes ☒ No ☐

Explain

Safety Criterion 4.5-2 list the implementing codes and standards DOE-STD-1066-97, DOE G-440.1, and NFPA 801. DOE-STD-1066-97 requires the use of UBC and the applicable building code in DOE G-440.1 is the 1997 edition of the UBC. Deleting the ISAR Section 8.3 reference to NFPA 220 and tailoring of NFPA 801 Section 3.5 to change the reference to UBC for construction removes the conflict and inconsistencies between the implementing codes and standards, and with the ISAR.

- 2 Does the revision result in the reduction in commitment currently described in the AB? Yes ☐ No ☒

Explain

The use of noncombustible or limited combustible materials for the construction of buildings containing significant quantities of radioactive and/or hazardous materials is not changed. This change makes the reference to the applicable building code (UBC) consistent between AB documents and with the SRD Safety Criterion 4.1-2, 4.1-3, 4.1-4, and 4.5-2. The fire protection features credited in DBE analysis is not affected by this change.

- 3 Does the revision result in a reduction in the effectiveness of any procedure, program, plan, or management process described in the AB? Yes ☐ No ☒

Explain

No programs, procedures, plans, or processes are affected by this change.

J. Complete the safety evaluation by describing how the revision to the AB:

- 1 will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety

This change does not alter compliance with the applicable laws and regulations and continues to conform to DOE/ RL-96-0006 4.2.2 Proven Engineering Practices/Margins by clarifying the use of the Uniform Building Code as the applicable building code. The UBC specifies fire resistant construction considering occupancy and building size to provide for adequate fire safety.

- 2 will continue to conform to the original submittal requirements associated with the AB documents being revised

The requirement for use of noncombustible or fire-resistive materials in the construction of buildings containing significant quantities of radioactive and/or hazardous materials is maintained by clarifying the use of the UBC as the governing building code as required by the implementing standards in the SRD.

- 3 will not result in inconsistencies with other commitments and descriptions contained in the AB or an authorization agreement

This change eliminates an inconsistency between the SRD and the ISAR and clarifies between the implementing standards within SRD Safety Criterion 4.5-2 that the UBC is the governing building code.



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ABCN Title Types of Building Construction - Fire Resistance Ratings

K. Justification of the Proposed Change

Provide a justification that demonstrates that the proposed change is safe

The UBC specifies building requirements for fire resistance, allowable floor area, building height limitations, and building separation and is identified as the applicable building code in the implementing standards of the SRD. The UBC is a recognized industry standard that specifies construction types meeting acceptable fire safety resistance requirements. This change does not affect the level of fire safety intended in SRD Safety Criterion 4.5-2 but provides a consistent reference to the UBC as the implementing standard for buildings containing radioactive or hazardous materials.

L. Certification of Continued SRD Adequacy

Based on evaluations from III.I.1 and III.J.1. If question III.I.1 is marked "yes, Project Manager certification is required. The Project Manager's signature certifies that the revised SRD continues to identify a set of standards that provide adequate safety, complies with WTP applicable laws and regulations, and conforms with top-level safety standards and principles. This certification is based on adherence to the DOE/RL-96-0004 standards identification process and successful completion of review and confirmation by the PSC.

WTP Project Manager:	<u>Ron Naventi</u>	<u></u>	<u></u>
	<i>Print/Type Name</i>	<i>Signature</i>	<i>Date</i>

M. List of Attachments

1. Initial Safety Analysis Report Volume II, 24590-WTP-ISAR-ESH-01-001-02, Rev 1, Section 8.3, Page 8
2. Safety Requirements Document Volume II, 24590-WTP-SRD-ESH-01-001-02, Rev 0, Appendix C Section 6.0, Page C-16

ABCN No.
24590-WTP-ABCN-ESH-02-012, Rev 0
Attachment 1

Initial Safety Analysis Report Volume II, 24590-WTP-ISAR-ESH-01-001-02, Rev 1, Section 8.3, Page 8

Total # of pages (including cover sheet): 2

5.6 Air Sampling

Continuous air monitors (CAMs) are used in areas where an individual is likely to be exposed to airborne radioactivity exceeding the respiratory protection action level, or where there is a need to alert personnel to an unexpected increase in airborne radioactivity levels.

6.1.3 NCS Limits

Most of the fissile material in the incoming and outgoing waste streams; however, is dispersed throughout large volumes of the waste resulting in a low concentration of fissile material in the process at any one time.

8.3 Fire Protection Features and Systems

The process building is designed and constructed of noncombustible or limited combustible materials ~~and complies with the standards of Type I construction as defined in NFPA 220, Standard Types of Building Construction.~~

The process building is subdivided into separate fire areas for the purpose of limiting the spread of fire. These fire confinement areas are separated by fire-resistance-rated barriers commensurate with the expected fire severity. Openings in these barriers are protected with automatic or fixed fire-resistance-rated closure devices such as doors, windows, dampers, or seals.

The ventilation system is designed to prevent the spread of heat and combustion products throughout the building in the case of fire.

9.4 Detection of Accidents

The RPP-WTP Facility is equipped with instrumentation designed to detect the initial indicators of off normal or accident conditions.

9.9 Description of the Emergency Operations Center

The EOC is designed to remain operational and life supporting for an extended period of time under accident conditions and maintain its structural integrity under various events, including natural phenomena.

9.10 Information Communicated and the Parties Contacted

A timely, reliable, and accurate communications system is important for notifications, since it supplies the framework for conducting response operations.

11.0 Deactivation and Decommissioning

In addition, the RPP-WTP incorporates provisions in the original design to facilitate deactivation and the final decommissioning.

ABCN No.
24590-WTP-ABCN-ESH-02-012, Rev 0
Attachment 2

Safety Requirements Document Volume II, 24590-WTP-SRD-ESH-01-001-02, Rev 0, Appendix C Section 6.0,
Page C-16

Total # of pages (including cover sheet): 2

6.0 NFPA 801, Standard for Facilities Handling Radioactive Materials

Revision: 1995 edition

Sponsoring Organization: National Fire Protection Association

RPP-WTP Specific Tailoring

The following tailoring of NFPA 801-95 is required for use by the RPP-WTP project as an implementing standard for fire safety.

Section 3-5

Replace “(Type I or Type II in accordance with NFPA 220, Standard on types of Building Construction)” with “(Fire resistance in accordance with the 1997 edition of the Uniform Building Code [UBC])”.

Justification: The applicable building code for RPP-WTP Project is the 1997 Uniform Building Code (UBC). UBC specifies building requirements for fire resistance, allowable floor area, building height limitations, and building separation.

Section 3-8

Replace entire section with the text of the same section from the 1998 version of NFPA 801.

Justification: The NFPA standard was revised in recognition of the impracticality of using only noncombustible surface finishes in areas processing or storing radioactive materials. Conformance with the revised standard will permit the use of limited combustible interior finishes.

Section 6.1.1

Change the code edition for NFPA 70 from 1993 to 1996 and the code edition for NFPA 780 from 1992 to 1995.

Justification: SRD safety criteria 4.3-2 and 4.4-12 reference these more recent editions of NFPA 70 and NFPA 780 as implementing standards. This change resolves the conflict with NFPA 801.